

2018

Knowing how without knowing that

Ian Harmon

West Virginia University, ian.harmon@mail.wvu.edu

Follow this and additional works at: https://researchrepository.wvu.edu/faculty_publications



Part of the [Epistemology Commons](#), and the [Philosophy of Mind Commons](#)

Digital Commons Citation

Harmon, Ian, "Knowing how without knowing that" (2018). *Faculty Scholarship*. 919.
https://researchrepository.wvu.edu/faculty_publications/919

This Article is brought to you for free and open access by The Research Repository @ WVU. It has been accepted for inclusion in Faculty Scholarship by an authorized administrator of The Research Repository @ WVU. For more information, please contact ian.harmon@mail.wvu.edu.

Knowing how without knowing that

Ian Harmon

1.0 Introduction

Intellectualism is the view that knowing how to do something amounts to knowing that something is the case. *Anti-intellectualism* is the view that knowing how consists in certain sorts of abilities or dispositions. In this paper I offer arguments against two versions of intellectualism. Stanley and Williamson (2001) hold that propositional knowledge is both necessary and sufficient for know-how. Against their view, I argue that there are cases in which such knowledge is insufficient. Bengson and Moffett (2012) argue that propositional knowledge is necessary, but not sufficient for know-how. Rather, they hold that knowing how requires meeting a further condition, namely, standing in a non-propositional *knowledge-of* relation to a way of doing something. Against this view, I argue that if propositional knowledge is necessary for know-how, then we must deny that many clear instances of know-how are in fact such instances. Taken together, my cases against Stanley and Williamson and Bengson and Moffett show that propositional knowledge is neither necessary nor sufficient for know-how.

2.0 Stanley and Williamson on know-how (hereafter, S&W):

S knows how to X if and only if

- (a) for some way, w , S knows that w is a way for S to X and
- (b) S entertains the proposition that w is a way for S to X under a practical mode of presentation.

To establish that (a) is a necessary condition for know-how, S&W use a linguistic analysis of the semantics of embedded questions.¹ Consider, for example:

(1) Hannah knows how to ride a bicycle.

Here, S&W's view is that in order for (1) to be true, Hannah must know an answer to the embedded question, *how to ride a bicycle*. S&W argue that embedded questions that begin with "how" refer to ways, and so for (1) to be true, Hannah has to know that some way, *w*, is a way for her to ride a bicycle. So, S&W conclude that (a) is necessary for know-how.

However, S&W hold that (a) is not sufficient for know-how because there are cases in which

(2) Hannah knows that *w* is a way for her to ride a bicycle

is true, but in which (1) is false. Consider:

Hannah does not know how to ride a bicycle. Susan points to John, who is riding a bicycle, and says, 'That is a way for you to ride a bicycle.' The way in which John is riding his bicycle is in fact a way for Hannah to ride a bicycle (Stanley and Williamson 2001, 428–429).

Here, S&W claim that, in the case when the demonstrative 'that' denotes John's way of riding a bicycle, this constitutes an instance in which (2) is true, but (1) is false.

According to S&W, both (1) and (2) ascribe to Hannah the same propositional knowledge. However, (1) and (2) differ in that they ascribe knowledge of the proposition under different modes of presentation. While (1) ascribes knowledge of the proposition under a *practical mode of presentation*, (2) ascribes knowledge of the proposition under a *demonstrative mode of presentation*.

¹See Karttunen (1977).

S&W explain practical and demonstrative modes of presentation by comparing them with *first-personal modes of presentation*. To provide an example of a first-personal mode of presentation, they ask us to suppose that John looks in a mirror, which he mistakenly believes to be a window, and sees a man whose pants are on fire. John, failing to recognize the man as himself, forms what S&W call a “demonstrative belief” that the man has burning pants. Although the man has burning pants, and John is in fact the man, he does not seem to believe that he himself has burning pants. In this context, then, (3) seems true whereas (4) seems false (Stanley and Williamson 2001, 428):

- (3) John believes that that man has burning pants.
- (4) John believes that he himself has burning pants.

Since “that man” and “he himself” refer to John, the complement clauses of “that” in (3) and (4) express the same proposition.² However, we can distinguish (3) and (4) by appealing to modes of presentation. In (3), John is entertaining a proposition under a demonstrative mode of presentation, while in (4) he is entertaining the very same proposition under a first-personal mode of presentation. S&W suggest that there is a conventional connection between pronouns such as ‘he himself’ and first-personal modes of presentation, and that this conventional connection provides additional information about how subjects of ascriptions think about the propositions being ascribed. This allows us to predict how these subjects will behave in various circumstances. For instance, thinking of a person as oneself, or thinking of a place as *here*, entails being disposed to behave in certain ways. Yet first person thought, S&W claim, is genuinely propositional. It is just the case that the possession of certain kinds of propositional knowledge is related to having certain dispositions.

² Here, we are operating on the assumption that modes of presentation are not semantically relevant.

S&W hold that, like (3) and (4), (1) and (2) express the same propositions. And just as we could with (3) and (4), we can explain the intuitive differences between (1) and (2) by appealing to distinct modes of presentation. Moreover, S&W posit a conventional connection between expressions that embed instances of the schema ‘how to X,’ and practical modes of presentations of ways. Moreover, they hold that thinking of a way under a practical mode of presentation entails having certain dispositions (Stanley and Williamson 2001, 429). On their view, this provides a way to explain a connection, which they grant, between know-how and dispositional states, without having to posit non-propositional knowledge.

3.0 Against Stanley and Williamson

3.1 Theoretical background.

In this section, I argue that satisfying S&W’s condition (b) requires non-propositional knowledge. If satisfying condition (b) is necessary for knowing-how, and satisfying this condition requires non-propositional knowledge, then knowing-how requires non-propositional knowledge, contrary to S&W’s claim that propositional knowledge is both necessary and sufficient for knowing-how. However, before presenting my argument, let’s establish some theoretical background.

In “Why it doesn’t matter to metaphysics what Mary learns,” Cummins et al (2014) draw on four assumptions to argue that Frank Jackson’s Mary does indeed learn something new when she sees red for the first time, but that this epistemic gain is orthogonal to physicalism and phenomenology. Here, my aim is to show that the theoretical background that underlies Cummins et al’s position renders S&W’s account of know-how implausible, in so far as it is an intellectualist position.

Cummins et al. begin their account by introducing the following assumptions (2014, 542-543):

(A) *Representational theory of content*: If Φ is the content of some mental state M of S, then M consists in part of a representation R whose content is Φ .

(B) *Representational pluralism*: There are multiple representational schemes, each with their proprietary content types and representational targets. These are generally not inter-translatable. Most of these are non-propositional in the sense that they are not candidates for truth-conditional semantics.³

(C) *Psychological representational pluralism*: The mind employs multiple representational schemes. These are generally not inter-translatable.

(D) *Epistemological representational pluralism*: A great deal of knowledge involves the exploitation of a diversity of representational schemes, both internal and external.

Cummins et al suggests that (A) is relatively uncontroversial in the context of the knowledge argument, and I take it that it is equally non-controversial here (2014, 543). As they acknowledge, some do reject the representational theory of content (Brooks 1991; van Gelder 1998). But philosophers of this type usually reject the theory as a means of understanding the mind or brain. I take it that such an option will not appeal to S&W or other advocates of intellectualism.

Assumption (B) claims that content can be represented in a variety of formats, many of which are non-linguistic or non-propositional. We can, of course, construct a representation in one format on the basis of a representation in another. Police sketch artists, for instance, create drawings on the basis of linguistic descriptions. Nevertheless, this is not a translation. The same point applies to other non-linguistic representations such as maps, models, partitioned activation spaces, and audio recordings. From this

³ See Haugeland (1991), Heck (2007), Fodor (2007), and Cummins (2010) for sustained defenses of theses along these lines.

point it follows that we cannot express the content of a non-linguistic representation in language.

A common objection to this assumption is that pictures can be symbolically encoded as pairs of gray-scale and position values. But as Cummins et al note, a symbolic encoding of a picture does not depict anything. The semantics of the picture do not overlap with the semantics of its symbolic encoding. A picture is about what it depicts while a symbolic encoding is about gray-scale and position pairs. Moreover, symbolic and pictorial representational schemes are processed quite differently. While we can easily process images, we need a computer with the appropriate software to process its symbolic encoding. Moreover, we can easily determine that two different pictures of the same individual are pictures of the same individual. This is far more difficult for a system that only has the symbolic encoding (Cummins et al 2014, 543).

Assumption (C) is simply the claim that the mind employs representational schemes as diverse as those discussed under (B). As Kant observed, percepts are not, and do not translate into, propositional thoughts (Cummins et al 2014, 544). We often express the fact that visual percepts, for instance, allow us to infer propositions by saying things like, “I *see* that the cat is on the mat.” Though language can be misleading in this respect, visual percepts, like pictures, are depictive representations that do not express propositions. The same point applies to other non-linguistic representations, such as maps, graphs, and models. They are all representations and none of them express propositions. Hence, they cannot be evaluated by truth-conditional semantics. Rather, they must be assessed for accuracy, often along competing dimensions.

Assumption (D), as stated, should be fairly non-controversial. We clearly acquire knowledge through visual perception, linguistic testimony, consulting maps, and studying diagrams. A good deal of this knowledge is propositional. Nevertheless, assumption (D), when combined with (A) through (C) opens up the possibility that we have non-propositional knowledge as well, for instance, when we exploit representations whose contents cannot be linguistically represented and come to know these contents. We can, for instance, know the layout of the New York subway system in virtue of having a mental map (Cummins et al, 2014, 544).

It is also worth mentioning that, in her discussion of approaching epistemology from the point of view of the value of understanding, Linda Zagzebski (2009) lends some support to assumptions (C) and (D) (and seems to accept assumptions (A) and (B)). She suggests that approaching epistemology from the perspective of understanding forces us to acknowledge that knowing does not always entail believing and that the object of knowledge is not always a proposition. She writes:

Knowledge might involve mental representations, but rather than to know exclusively through objects with the structure of sentences, one could know through many other kinds of structures, including maps, graphs, diagrams, and models. Some forms of understanding might not even involve representations. What happens when we understand a work of art or music, the psychological structure of a character in a novel, or a theory in physics? Do we have a kind of knowledge? If so, would it be accurate to say that what we know is reducible to a list of propositions? I find that dubious, and I suspect that contemporary epistemology has suffered by ignoring the value of understanding. I also suspect that understanding is connected with nonpropositional knowledge, which, as I mentioned earlier, is usually left aside in contemporary treatments in knowledge (Zagzebski, 2009, 7).

While I am sympathetic to Zagzebski's suggestion that understanding is connected with propositional knowledge, this lies beyond the scope of my present concern. The point,

however, is that there is precedent in both epistemology and philosophy of mind for taking seriously the thesis of representational pluralism, as well as its psychological and epistemological variants. Here, my aim is to show that taking these theses seriously renders S&W's view that know-how consists in propositional knowledge dubious. To show that this account is dubious, I now turn to argue that satisfying condition (b) requires non-propositional knowledge.

3.2 The case against S&W

In order to see why satisfying condition (b) requires non-propositional knowledge, we need to get clear on what work is done by practical modes of presentation in S&W's account. As mentioned above, S&W claim that thinking of a proposition under a practical mode of presentation entails having certain dispositions. Since they hold that knowing how requires thinking of a proposition under a practical mode of presentation, and since thinking of a proposition under such a mode of presentation requires having certain dispositions, knowing how, on their view entails having certain dispositions. In other words, having certain dispositions is necessary for knowing how.

At first pass, this seems problematic for S&W's view, insofar as their view is an intellectualist position. After all, a standard *anti*-intellectualist account of know-how holds that knowing how consists in having certain dispositions or abilities. However, a response is available for S&W. Although their view entails that having certain dispositions is *necessary* for knowing-how, it does not entail that these dispositions are *constitutive* of knowing-how. Know-how is constituted by propositional knowledge,

specifically, propositional knowledge under a practical mode of presentation. It's just a feature of the way things work that dispositions always come along with know-how.

Nevertheless, the introduction of dispositions is problematic for S&W. On their view, practical modes of presentation are invoked to explain the connection between know-how and dispositions. They believe that positing dispositions in this way does not require positing non-propositional knowledge. But presumably, these dispositions are the ones that enable performance. In the case of many activities, such as riding a bicycle, it is highly implausible that propositional knowledge accounts for dispositions that enable performance. More plausibly, the exploitation of representations formed on the basis of sensory motor data – practice, in short – accounts for these dispositions. These claims are supported by empirical research on motor skill acquisition. Professional ballet dancers, for instance, exhibit greater accuracy in position-matching the upper limb compared to non-dancers. These dancers are distinguished from the general population, in part, by the fact that they regularly practice dancing, whereas the general population typically does not. This strongly suggests, then, that practicing improves motor-sensory skills, such as dancing or bicycle riding (Ramsay and Riddoch, 2001).

Now, of course, nothing in S&W's position entails that practice doesn't improve motor skills. They could simply say, of the evidence just presented, that while the high level performances of professional dancers are attributable to practice, their know-how still consists in propositional knowledge.

However, it isn't merely the case that practice improves motor skills – it's also an essential process in learning them to begin with, that is, coming to know how to do things that involve motor skills. When children develop motor skills, they have to constantly

practice in order to reinforce movement patterns and finally achieve fine motor skills.

The essential role of practice continues later in life whenever new motor skills are learned. Early on, one practices isolated components of a movement, which are then put together at later stages (Ramsay and Riddoch, 2001). Of course, it may not be possible to identify the point at which one can be said to have the dispositions that enable performance of the action in question. But nevertheless, dispositions are by their very nature stable to at least some degree. That is, one's dispositions don't vary from moment to moment, or day to day. When learning a new skill, such as a dance, one doesn't have the dispositions relevant to performing even an isolated move on the basis of practicing it once. Often, one has to practice the move in question dozens of times before some sense of stability emerges.

Now it is important here to distinguish having the relevant dispositions from having the ability to successfully complete the task in question, lest we beg the question against the intellectualist. Fortunately, this can be done by way of turning our attention to the fact that we practice isolated components of a movement before putting them together into complex movements. After practicing various isolated movements enough times, we may develop the dispositions that enable performance, where performance is understood as "putting it all together," despite still not being able to put it all together. When learning lindy hop, for example, one may first practice the eight-count basic, and then the basic swingout, followed by other patterns such as the six-count basic, tuck turn, inside turn, and outside turn. And as any one who has taken lindy hop lessons can tell you, there is a big difference between having the ability to regularly complete each movement pattern

successfully on the one hand, and having the ability to “put it all together” on the social dance floor.

S&W can, of course, hold that one who has learned various movement patterns but cannot put them together knows how to lindy hop, and at this point I see no reason to disagree. But this is because through practicing various movement patterns, that which one acquires is not propositional knowledge.

S&W and I will certainly disagree on this point. They can claim that we acquire the relevant dispositions through practice because through this practice we acquire knowledge of the right proposition under a practical mode of presentation. Let’s think about our lindy hop student who can’t “put it all together.” At her first lesson, we can imagine her instructors giving a demonstration that puts together all of the moves she eventually acquires the ability to perform. On the basis of this demonstration, she comes to know, “That’s a way for me to lindy hop.”⁴ Yet at this point, she doesn’t know how to lindy hop, and this might be because she doesn’t know that that the way in question is a way for her to lindy hop under a practical mode of presentation. But after a few weeks of lessons, she comes to have the ability to regularly perform all the individual movements successfully (though she still can’t put them all together) and this allows her to entertain the relevant proposition under a practical mode of presentation.

But if practice is required to entertain the relevant proposition under a practical mode of presentation, in what sense is S&W’s account of know-how still a propositional account? It seems that in order to maintain that know-how is propositional in cases like these, S&W must hold that the content one acquires through practice is propositional. However, it is not clear why S&W should claim this. Our lindy hop student, according to

⁴ The demonstrative, “that,” refers, of course, to the way in which her instructors are dancing.

their view, already has all the propositional content that she needs after the demonstration at her first lesson. The gap between her epistemic state at that time and knowing how to lindy hop is explained in terms of her not knowing the proposition under the right mode of presentation, not in terms of her lacking further requisite propositional knowledge.

Further more, it's highly implausible that the content one acquires through practice is propositional. There is good reason to believe that athletic expertise is characterized by integrated networks of basic action concepts (BACs) (Schack, 2004).⁵ Individual BACs represent functionally relevant elementary components or transitional states of complex movements and networks of BACs represent functionally meaningful sub-movements. For tennis serves, an individual BAC can represent, for example, bending the knees, or racket acceleration and a BAC network will represent one of the three distinct phases of a tennis serve (pre-activation phase, strike phase, and final swing phase). Schack and Mechsner (2006) found that the integrated BAC networks of tennis experts were organized in a way that mirrors the three distinct phases of tennis serves. That is, their networks were organized in distinctive hierarchical tree-like structures corresponding to the three serve phases. Moreover, these expert networks didn't significantly differ between individuals and they were well matched with the functional and biomechanical demands of tennis serving. The representations of less experienced players and non-players, by contrast, failed to exhibit hierarchical organization, varied more across individuals, and were less well matched with functional and biomechanical demands of tennis serves. Hence, the Schack and Mechsner study provides evidence that BAC networks in long-term memory serve as the basis for action control in skilled movements.

⁵ Networks, of course, are not propositional schemes of representation

Just as in the case of dancing, expert tennis players are, in part, distinguished from non-experts by the degree to which they have practiced playing tennis. We have already seen that there are strong empirical reasons supporting the claim that the content acquired through practice grounds know-how related dispositions and now we have empirical reasons to support the claim that this content is non-propositional. That is, Schack and Mechsner's data suggest that tennis serving know-how is represented in long-term memory in the form of integrated BAC networks. Moreover, they found that the structure of networks differs between expert players and non-experts. This suggests that through practicing tennis, players acquire content that is represented in a network format, that is, content that is non-propositional.

For S&W, propositional knowledge under a practical mode of presentation is necessary and sufficient for knowing how. Entertaining propositions under practical modes of presentation entails having certain dispositions, presumably dispositions that enable performance. But while entertaining propositions under practical modes of presentation *entails* having these dispositions, it is implausible that this *explains* these dispositions. Rather possessing the content that one acquires through practice entails having the relevant dispositions and enables one to, or entails that one does, entertain the relevant proposition under a practical mode of presentation. In other words, entertaining propositions under practical modes of presentation entails having certain dispositions because acquiring the content that one acquires through practice entails having certain dispositions and, perhaps, entertaining propositions under practical mode of presentation.

Above, I suggested that, although having certain dispositions is necessary for know-how on S&W's view, this might not be problematic for their position because they

can claim that despite dispositions being necessary for know-how, they are not constitutive of know-how. But now it appears that in order to have the relevant dispositions, one must possess the sort of content that one acquires through practice, content that will typically be, at least in part, non-propositional. While having this content entails having certain dispositions, it also may entail entertaining the relevant proposition under a practical mode of presentation. But now it appears that, while entertaining a proposition under a practical mode of presentation is necessary for knowing how, it is not constitutive of knowing how. Rather, the content that one acquires through practice, along with certain propositional knowledge, is constitutive of know-how. If this is correct, then while propositional knowledge is necessary for know-how, it is not sufficient, contrary to the view of S&W.

4.0 Bengson and Moffett on know-how

According to Bengson and Moffett (hereafter, B&M):

S knows how to X if and only if

(c) S stands in a non-propositional knowledge-of relation⁶ to a non-propositional item, namely, a way of X-ing, w , and

(d) S has a grasp of a complete and correct conception of w .

Notably, B&M's view amounts to a "non-propositional intellectualism," as captured by condition (c). For our purposes, (c) can be understood as requiring that, in order to know how to X, one must have familiarity or acquaintance with a way of X-ing, and this familiarity or acquaintance is to be understood as a non-propositional knowledge relation.

⁶ B&M refer to this as an *objectual knowledge* relation

Although B&M hold that propositional knowledge is not sufficient for know-how, condition (d) entails that such knowledge is necessary. In other words, requiring that one has a complete and correct conception of a way of X-ing in order to know how to X entails requiring that one have certain propositional knowledge in order to know how to X. While it is possible to have a non-propositional view of conceptions, such a view is not held by B&M. Their motivation for holding that (d) is a necessary condition for know-how stems from an observation that one can have knowledge of a way of X-ing without knowing *that* the way in question is a way to X. This is because, while they hold that having knowledge of a way of X-ing is non-propositional, it is in part grounded in propositional attitudes.

B&M discuss several ways in which one can fail to satisfy (d). First, one can simply lack a conception of *w*. As they note, one way to escape avalanches is by making swimming motions. A competent swimmer who has never heard of or encountered avalanches may have knowledge of this way of escaping avalanches and may also have the relevant ability. But since she has no conception of avalanches, she does not know how to escape them. In other words, she lacks a conception of the way of escaping avalanches, even though she has knowledge of this way.

The second way in which one can fail to satisfy (d) is by having an *incorrect* conception of *w*. Such a failure is illustrated by the following example (Bengson and Moffett, 2012, 171):

Salchow. Irina, who is a novice figure skater, decides to try a complex jump called the salchow. When one performs a salchow, one takes off from the *back inside* edge of one skate and lands on the *back outside* edge of the opposite skate after one or more rotations in the air. Irina, however, is seriously mistaken about how to perform a salchow. She believes incorrectly that the way to perform a salchow is to take off from the *front outside* edge of one skate, jump in the air, spin, and land on the *front inside* edge of the other skate. However, Irina has a severe neurological abnormality that makes her act in ways that differ dramatically from how

she actually thinks she is acting. So despite the fact that she is seriously mistaken about how to perform a salchow, whenever she actually attempts to do a salchow (in accordance with her misconceptions), the abnormality causes Irina to unknowingly perform the correct sequence of moves, and so she ends up successfully performing a salchow. Although what she is doing and what she thinks she is doing come apart, she fails to notice the mismatch.

Clearly Irina has the ability to do a salchow and the way in which she performs the jump is indeed a way for her to do so. However, according to B&M's view, she does not know how to do the salchow because she has an incorrect conception of how salchows are executed.

The third way in which one can fail to satisfy (d) is to have an *incomplete* conception of w . This occurs in cases where one has the ability to carry out a project,⁷ but lacks all of the information that is necessary for carrying out that project. Such a person has, for instance, to look up instructions in order to bring the project to fruition. At the time of such a person's decision to look up instructions, B&M hold that the individual does not know how to carry out the project because he or she has only an incomplete conception of the way of doing so.

Finally, one may fail to satisfy (d) due to conceptual confusion. Here, B&M ask us to imagine that Irina corrects her conception of a way of doing a salchow by memorizing her coach's instructions. Her conception is now correct because she correctly believes that the way to do a salchow is to take off from the back inside edge of one skate and land on the back outside edge of the other after one or more rotations in the air. However, Irina suffers, like Burge's (1979) arthritis patient, conceptual confusion. Specifically Irina takes her back outside edge to be her front inside edge and her back inside edge to be her front outside edge. While Irina's conception of how to do a salchow

⁷ B&M use the example of building a kytoon – a lighter than air kite.

is now otherwise correct and complete, she still fails to satisfy (d) because she lacks a sufficient mastery of certain concepts involved in this conception.

In regards to these examples, B&M write that, “The problem in each case ultimately can be traced to a problem in certain of one’s propositional attitudes or to the absence thereof,” (Bengson and Moffett, 2012, 188). Although B&M discuss the problem in terms of “propositional attitudes,” it is reasonable to infer that the requisite propositional attitudes are instances of propositional knowledge. For instance, in discussing the salchow case, they write, of Irina, that, “She is *mistaken* about the way to do a salchow (she conceives of a certain sequence of movements as constituting a way of doing a salchow when they do not) and hence does not know how to do one,” (Bengson and Moffett, 2012, 186, emphasis added). Irina clearly has a propositional attitude about how to do a salchow. But the problem is that this attitude amounts to a false belief about how salchows are performed. In other words, she does not *know that* the way to do a salchow is to take off from the *back inside* edge of one skate and land on the *back outside* edge of the opposite skate after one or more rotations in the air.

5.0 Against Bengson and Moffett

My case against B&M consists in demonstrating that there are real life cases that are similar to Irina’s situation in all the relevant respects that seem to be clear cases of know-how. Since B&M’s account entails that Irina does not know how to do a salchow, they are committed to denying that these real world instances of know-how are in fact such instances.

B&M’s reason for denying that Irina knows how to do the salchow is that she has false beliefs about what she is doing, and thereby fails to satisfy (d). While the *Salchow*

case may seem far-fetched due to the odd nature of Irina's disorder, the scenario illustrates an example of a phenomena which is in fact commonplace, that is, a case in which an agent believes herself to be doing one thing while in fact doing something else. Let's turn to three real life examples.

First, baseball batters are advised to "keep your eye on the ball." This suggests that a way to hit a baseball is to track the baseball's trajectory from the pitcher's release point until it comes into contact with the bat. But in fact, batters *cannot* "keep their eye on the ball" due to the high velocities of pitches and the limitations of the human eye's ability to track high speed movements (Hubbard and Seng 1954; Bahill and LaRitz 1984). If some successful hitters *believe* they hit by way of keeping their eyes on the ball, we have what is, in all the relevant respects, a *Salchow*-style case.

The second case comes from Dreyfus (2005, 63, footnote 32) who writes:

When Air Force instructor pilots teach beginning pilots how to scan their instruments, they teach the rule that they themselves were taught, and, as far as they know, still use. At one point, however, Air Force psychologists studied the eye movements of instructors during simulated flights and found, to everyone's surprise, that the instructor pilots were not following the rule they were teaching. In fact, as far as the psychologists could determine, they weren't following any rule at all (DeMaio et al. 1976).

Dreyfus's example provides another real life *Salchow*-style case, that is, a case in which individuals successfully X but have false beliefs about how they go about X-ing.

These two examples appear to constitute instances of know-how. Baseball hitters seem to know how to hit baseballs and Air Force instructor pilots seem to know how to scan their instruments. If B&M are committed to denying that Irina knows how to do the salchow, then they are also committed to denying that Air Force instructor pilots know how to scan

their instruments, and that baseball players know how to hit baseballs. While making such denials is not incoherent, the existence of these cases gives us reason to doubt the necessity of complete and correct conceptions, that is, propositional knowledge, for know-how.⁸

The role of complete and correct conceptions in B&M's position raises a subtle ambiguity. If we consider, for example, Dreyfus's instructor pilot case, it seems that while the instructor pilots *know how to scan instruments* (but do not know how instruments are scanned), the Air Force psychologists, by way of studying the pilots, come to *know how instruments are scanned* (but do not know how to scan instruments). Similar considerations arise in the baseball example. Hitters know how to hit baseballs, but not how baseballs are hit, while some psychologists know how baseballs are hit, but do not know how to hit baseballs.

In these cases where agents successfully X, but have false beliefs about how X-ing is done, B&M are committed to denying that the agents have know-how because they fail to meet the complete and correct conceptions requirement. Due to this denial, it would seem that B&M, and perhaps intellectualists in general, require that knowing how to X requires knowing how X-ing is done. However, the examples just discussed provide strong reason for denying that this is the case. In other words, the cases suggest that one can know how to X, without knowing how X-ing is done, just as one can know how X-ing is done without knowing how to X.⁹

Perhaps more problematically, a final example suggests that there is an ambiguity in B&M's very notion of complete and correct conceptions. NASA computes escape

⁸ For a similar line of objection to intellectualism, see (Wallis 2008).

⁹ See Hetherington (2008) for discussion of this distinction.

velocity using Newtonian mechanics. So it follows that using Newtonian mechanics is a way for NASA to compute escape velocity. But According to B&M, for NASA to know-how to compute escape velocity, it must have a complete and correct conception of a way of doing these computations. In this case, it is not clear what having a complete and correct conception requires. If it requires having a complete and correct conception of the relevant physics, then this would entail that, according to B&M, NASA does not know how to compute escape velocity since Newtonian mechanics is an incorrect account of physics. On the other hand, if having a complete and correct conception of a way of computing escape velocities requires having a complete and correct conception of Newtonian mechanics, that is, a way of doing the computation that is effective (and presumably a way that NASA knows to be effective), then NASA knows how to compute escape velocities in virtue of applying a false theory that they know to be false. In other words, NASA knows that Newtonian mechanics will work for the task at hand even though it involves entertaining some false assumptions. If NASA has a *complete* conception of Newtonian mechanics, there is a clear sense in which this conception is not *correct*. But if what is required is that NASA has a correct conception of a way to compute escape velocities, and the way of doing this is to use Newtonian mechanics, then they do have a correct conception of the way.

Now suppose that Irina learns that, due to her condition, the “correct” way to do a salchow is not a way *for her* to do the jump. However, she could come to know that by entertaining a false description of how to do a salchow, she can get the job done. Under these conditions, Irina’s situation becomes just like the NASA example. She knows a way that is a way *for her* to do the salchow, and she has a correct conception of what she

needs to do in order to execute the move. She may or may not know how the salchow is done (i.e. she may or may not be able to give the correct description of the maneuver), but she knows how to do it.

Of course, one might worry that if Irina comes to realize that the way she believes the jump is performed is incorrect, then this will undercut her ability. If we assume that she must believe the false description of how the jump is performed is correct, then the case is different from the NASA example (since NASA, of course, knows that Newtonian mechanics is not the correct account of physics), but is similar in all the relevant respects to the baseball case.

My discussion of B&M demonstrates that if propositional knowledge is necessary for know-how, then on their account, we will be forced to deny that many, seemingly clear cases of know-how are in fact such cases. Moreover, the notion of complete and correct conceptions is ambiguous, as illustrated by the *Salchow* and NASA examples. B&M's position, in particular the complete and correct conceptions requirement, rests on our having certain semantic intuitions in response to thought experiments, such as the *Salchow* example. But there is no reason to think that ordinary language is designed to be as precise as B&M's account requires; it did not evolve to accommodate cases like *Salchow*, or even the baseball example. To attempt to motivate B&M's position by appeal to semantic intuitions requires a revisionary account of how language works. But, whenever we are talking about psychological terms, such as know-how, revision ought to be motivated by science, not intuitions of the sort required by B&M. There is no shortage of precedent for scientifically motivated revisions (consider 'motion,' 'force,' 'gene,' 'atom,' and so on). Why should we think 'know-how' is different? The *Salchow* example

exploits a possibility that has been revealed by neuroscience, a possibility that would have been incomprehensible not long ago. While B&M are free to push for revision, such revision must be motivated scientifically, not by semantic intuitions.

In any case, the examples I have discussed appear to be non-controversial examples of knowing-how. According to B&M's position, these are not cases of knowing-how. It is, of course, open to B&M to maintain their position. However, the fact that these examples appear to be non-controversial as examples of knowledge-how provides strong reason for denying that propositional knowledge is necessary for know-how.

6.0 Conclusion

In this paper I have offered reasons for rejecting two prominent intellectualist accounts of know-how. First, I have argued that for many activities, knowing how requires having non-propositional knowledge of a way to do the activity in question. This undercuts intellectualist views, such as S&W's, that hold that propositional knowledge is sufficient for knowing how. Second, I have argued that if propositional knowledge is necessary for know-how, as B&M and S&W both maintain, then we have to deny that many intuitively clear cases of knowing how are in fact such cases. Taken together, it appears that propositional knowledge is neither sufficient nor necessary for know-how.

Moreover, in making my case against S&W, I suggest that the content that one acquires through practice is quite plausibly constitutive of know-how. For many skills or activities, this content will be non-propositional. The plausibility of this claim stems from representational pluralism, and its psychological and epistemological variants. These theses, along with the representational theory of content, open space for a new account of

know-how that is neither intellectualist nor anti-intellectualist. On such a view, propositional knowledge is, contra intellectualism, not always necessary or sufficient for know-how. However, know-how is not, contra anti-intellectualism, simply having an ability or disposition. Rather, knowing-how consists in possessing the content that that enables one to execute a task. In some cases, such as doing mathematics, this content may be propositional. But in others, such as figure skating or skiing, this content is likely non-propositional. Here I do not have the space to give a full account of such a view. However, I believe that understanding the nature of knowing-how requires moving beyond the intellectualist-anti-intellectualist dichotomy.

References

- Bahill, A. T., and T. LaRitz. 1984. "Why Can't Batters Keep Their Eyes on the Ball?" *American Scientist*, 72:3, 249-253.
- Bengson, J., and M. A. Moffett. 2012. "Non-propositional Intellectualism." In *Knowing How: Essays on Knowledge, Mind, and Action*, edited by J. Bengson and M. A. Moffett, 161–195. Oxford University Press.
- Brooks, R. A. 1991. "Intelligence Without Representation." *Artificial Intelligence* 47 (1–3) (January): 139–159.
- Burge, T. 1979. "Individualism and the Mental." *Midwest Studies in Philosophy* 4 (1): 73–121.
- Cummins, R. 2010. "Representational Specialization: The Synthetic a Priori Revisited." In *The World in the Head*. Oxford: Oxford University Press.

- Cummins, R., M. Roth, and I. Harmon. 2014. "Why It Doesn't Matter to Metaphysics What Mary Learns." *Philosophical Studies*, 167:3, 541-555.
- DeMaio, J., S. Parkinson, B. Leshowitz, J. Crosby, and J. A. Thorpe. 1976. "Visual Scanning: Comparisons Between Student and Instructor Pilots." DTIC Document.
- Dreyfus, H. L. 2005. "Overcoming the Myth of the Mental: How Philosophers Can Profit from the Phenomenology of Everyday Expertise." In *Proceedings and Addresses of the American Philosophical Association*, 79:47-65.
- Fodor, J. 2007. "The Revenge of the Given." In *Contemporary Debates in Philosophy of Mind*, edited by B. McLaughlin and J. Cohen, 105-116.
- Haugeland, J. 1991. "Representational Genera." In *Philosophy and Connectionist Theory*, edited by William Ramsey, Stephen Stich, and David Rumelhart, 61-89. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Heck, R. 2007. "Are There Different Kinds of Content?" In *Contemporary Debates in Philosophy of Mind*, edited by B. McLaughlin and J. Cohen, 117-138. Malden, MA: Blackwell.
- Hubbard, A. W., and C. N. Seng. 1954. "Visual Movements of Batters." *Research Quarterly of the American Association for Health, Physical Education, & Recreation*, 25:1, 42-57.
- Karttunen, L. 1977. "Syntax and Semantics of Questions." *Linguistics and Philosophy* 1 (1): 3-44.
- Schack, T. 2004. "The cognitive architecture of complex movement." *International Journal of Sport and Exercise Psychology*, 2:4, 403-438.
- Schack, T. and F. Mechsner. 2006. "Representation of motor skills in human long-term memory." *Neuroscience Letters*, 391, 77-81.
- Stanley, J., and T. Williamson. 2001. "Knowing How." *The Journal of Philosophy* 98 (8) (August): 411-444.
- van Gelder, T. 1998. "The Dynamical Hypothesis in Cognitive Science." *The Behavioral and Brain Sciences* 21 (5) (October): 615-628; discussion 629-665.
- Wallis, C. 2008. "Consciousness, Context, and Know-how." *Synthese* 160 (1): 123-153.
- Zagzebski, L. 2009. *On Epistemology*. Belmont, CA: Wadsworth.